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Review Article

Interventions on Improving Medication Adherence in Malaysia: A Mini Review

Chuo Yew Ting[1,2], Shahren Ahmad Zaidi Adruce[2], Shing Chyi Loo[1,*], Hiram Ting[3,4], Jessie Tnay[2]

[1]Division of Pharmacy Enforcement, Sarawak State Health Department Jalan Diplomatik, Off Jalan Bako, Sarawak, MALAYSIA.

[2]Institute of Borneo Studies, Universiti Malaysia Sarawak Jalan Dato Mohd Musa, Kota Samarahan, Sarawak, MALAYSIA.

[3]Faculty of Hospitality and Tourism Management, UCSI University, MALAYSIA.

[4]Sarawak Research Society, Sarawak, MALAYSIA.

ABSTRACT

Introduction: Medication non-adherence is a global issue. Past review on the interventions to improve medication adherence provided little practical implications for healthcare professionals and policy makers in Malaysia, due to the substantive differences across studies. Hence, this review attempted to evaluate the interventions on improving medication adherence conducted in Malaysia, to generate some insights and recommendations for future interventions. **Method:** Search of past literatures from Google Scholar, PubMed, MEDLINE, EBSCO, PsycINFO, CINAHL (via EBSCO) with search strategy: "medication adherence or medication compliance" [Mesh] AND "intervention" [Mesh] AND "Malaysia" AND English [lang-Lang] was conducted on September 28, 2016. The framework of judging methodological quality used by Zwikker and colleagues was employed. **Results and Discussion:** A total of 28 articles were identified. Studies which were not conducted using Malaysia population, not measuring medication adherence, without intervention on medication adherence, non-prospective and non-experimental design were omitted. Hence, 9 articles were retained for further evaluation. Eight out of the nine prospective randomized controlled studies were found to be low-quality studies. Overall, interventions that were pharmacist led, physician led, adoption of automated text messaging reminder and improvised medication labelling were found to be effective. **Conclusion:** This review provides valuable insights on contemporary interventions to improve medication adherence conducted in Malaysia. It is suggested that multifaceted approach with involvement of different healthcare professionals should be encouraged to synergize the strengths of each profession and to further enhance the effectiveness of interventions.

Key words: Interventions, Improving, Medication adherence, Malaysia, experimental study.

Correspondence

Mr. Shing Chyi Loo, Division of Pharmacy Enforcement Division, Sarawak State Health Department Jalan Diplomatik, Off Jalan Bako, 93050 Sarawak, MALAYSIA.

Phone: +60 82473200

Email: weekshing@gmail.com

Mr. Chuo Yew Ting, Division of Pharmacy Enforcement, Sarawak State Health Department Jalan Diplomatik, Off Jalan Bako, 93050 Sarawak, MALAYSIA; 2.Institute of Borneo Studies, Universiti Malaysia Sarawak Jalan Dato Mohd Musa, 94300, Kota Samarahan, Sarawak, MALAYSIA.

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INTRODUCTION

In 2013, the World Health Organization (WHO) disclosed a worrying fact that among patients with chronic diseases, approximately half of them do not adhere to the prescribed medication.[1] Moreover, most of them are found to have failed to comply with the medication regimen[2] and continue taking their prescribed medications in less than a year.[3] It is both puzzling and alarming that the patients who wish to be cured do not adhere to the medications specifically dispensed by the healthcare professionals to them. Just as a saying goes "Drugs do not work in patients who do not take them", it sums up the situations pertaining to medication adherence with many patients today.[4] Non-adherence to medication had caused wastage of healthcare expenditures on medication and additional medication costs for the treatment of complications, up to USD 100 billion.[5,6] This worries the authorities and policy makers of any nation whose main objective is to utilize the resources and maximize the benefits efficiently. Additionally, such high rate of non-adherence indicates that patients are not likely to obtain the benefits from the prescribed medications which in turn could put their lives at greater risk. Hence, be it from the perspectives of healthcare professionals or policy makers, formulating effective interventions to improve medication adherence is a matter of utmost urgency.

The latest review on interventions to improve medication adherence was done in 2014 by Nieuwlaat *et al.*[7] It includes the Randomized Control Trial (RCT) with lowest risk of bias. The review covers a total of 182 RCTs with 46,962 participants. Among the most recent 109 RCTs included (After January 2007), 17 (15.6%) are from middle-income nations and 5 (4.6%) from low-income nations. This shows that high-quality and evident interventions in middle-income nations to improve medication adherence is still lacking. Moreover, little is known about their practical implications for healthcare professionals and policy makers in Malaysia, due to the substantive differences across studies in terms of settings, medical illness, medication regimens, adherence measures and clinical outcome measures.

Malaysia is a multi-ethnic, multicultural and multilingual middle-income nation which operates a two-tier health care system consisting of both a government-run universal healthcare system and a co-existing private healthcare system. Problems related to low medication adherence are unfortunately prevailing. Past studies have shown non-adherence rate among patients ranges from 46.6% to 56% (Not including worst medication adherence among schizophrenic patients) and little improvement has been done over the years.[8-10] Furthermore, based on a systematic review conducted by Haynes *et al.* it is claimed that there is little evidence to substantiate the effectiveness, feasibility and affordability of interventions to improve the long-term self-administered medications' adherence.[11] Hence, the present review attempts to evaluate the interven-

tions on improving medication adherence conducted in Malaysia and to identify the factors which contributed to the effectiveness, to generate some insights and recommendations for future interventions.

MATERIALS AND METHODS

Literature on interventions to improve medication adherence in Malaysia was searched for and reviewed, regardless of the studies' setting, medical disorders, participants, interventions, adherence measurement and clinical outcomes. The date of literature search was conducted on September 28, 2016. The scope of search was limited to studies indexed or listed in Google Scholar, PubMed, MEDLINE, EBSCO, PsycINFO, CINAHL (via EBSCO), written in English, no study date limitation, with search strategy: "medication adherence or medication compliance" [Mesh] and "intervention" [Mesh] and "Malaysia" and English [lang]. A total of 28 articles were identified. Studies which were not conducted using Malaysia population, not measuring medication adherence and without intervention on medication adherence were omitted. Subsequently, 12 articles were retained for further evaluation.[12-23] The summary of these articles which are related to the interventions on improving medication adherence in Malaysia are tabulated as shown in Supplementary Material 1. To evaluate the methodological quality of the included studies, the framework of judging methodological quality used by Zwikker *et al*. originated from Hayden *et al*. is adopted.[24,25] Such framework is comprised of 23 items which are in turn divided into six bias domains, namely (1) study participation, (2) study attrition, (3) prognostic factor measurement, (4) outcome measurement, (5) confounding measurement and account, (6) analysis. Each item could be scored as either yes (no unacceptable amount of bias), partly (Unsure) or no (Unacceptable amount of bias introduced). Subsequently, each bias domain will have a scoring method to judge the presence or absence of bias. Studies that have four or more domains which are bias free are considered to be high-quality studies, so on and so forth.

RESULTS

A total of 66% of the studies employed prospective RCT design with some further elaborating the type of randomization, such as block stratified randomization and blinding strategy. Generally, those studies which employ prospective randomized control trial,[12-14,16-20,22] multicentered,[20,23] longer period of intervention evaluation with equal or more than 6 months[13,18,19,21,22] and having blinding approach[20] are better approaches to evaluate the effectiveness of an intervention.[26] Two studies which use retrospective approach[15,21] would create selection bias due to lacking randomization, where the significant difference between intervention and control groups is confounded with pre-existing differences between both groups.

Three non-prospective and non-randomized controlled studies[15,21,23] are excluded from the evaluation due to different study design. Results of the judgment on methodological quality of nine prospective randomized controlled studies are presented in Supplementary Material 2. It is found that eight out of nine prospective randomized controlled studies are considered low-quality studies.[12-14,16-20,22] Such findings on the methodological quality could be arguably over-stringent as Zwikker *et al*. also reported that all 30 included studies under review were judged as low-quality study with the use of the same judging framework.[27] On the other hand, the framework undeniably provides a clear guideline on designing a study with high quality methodology.

DISCUSSION

Most of the interventional studies in Malaysia to improve medication adherence are conducted after 2010. This denotes a slight delay of putting emphasis on the issue. Apparently, progressive improvement could be observed since then with more high-quality evident studies conducted among Malaysia population. All studies reveal high rates of poor medication adherence before the interventions took place, which provided valuable insights to healthcare professionals and authorities on the magnitude of the problem. Ten out of 12 studies were conducted at single study sites and only one conducted at non-governmental primacy care clinics.[14] This suggest that most of the studies are led by the governmental health institutes due to greater resources mobilization. Personnel involved in the intervention were mostly by the pharmacists alone, which account for 75%. The rest are done with the combination of pharmacists and physicians, by the physicians alone as well as using automated text-messaging system and system administrator. Both pharmacist-led and physician-led interventions in improving the medication adherence were found to be effective. Hence, it is suggested that multifaceted approach with involvement of different healthcare professionals should be encouraged to synergize the strengths of each profession and to further enhance the effectiveness of interventions.

Medication Therapy Adherence Clinic is a clinical pharmacy service introduced by Pharmaceutical Service Division, Ministry of Health Malaysia in 2004 to enhance the medication management among the patients.[28] The service, which includes drug therapy monitoring and patient's education on their disease management through medications, covers various diseases that acquire long-term and sophisticated medications, such as diabetes mellitus, hemophilia, warfarin, neurology and heart failure. All pharmacist led interventions in improving medication adherence were effective, which is in line with most of the findings from other studies, with some exceptions.[29] The contrasting finding could be due to the content of the intervention, study design, duration of intervention and measurement of effectiveness. The top three changes of medication adherence level after pharmacist led intervention reported are from 6.31 to 10.62,[12] 7.00 to 10.84[15] and 3.51 to 6.90.[14] However, as mentioned earlier, the level of change is affected by study design and measurement method. Thus, bias is obviously unavoidable if one compares the effectiveness of studies with just a single indicator.

The finding of the included study where the intervention on improving medication adherence is led by physicians is in line with the findings of past studies[30] as well as in contrast with some other studies.[29] Notably, a systematic review on physician involved interventions in improving medication adherence found that interventions with physician-involved are less effective than those without the involvement of physicians.[31] The review suggests that allied healthcare professionals, particularly pharmacists who are equipped with the skills in pharmaceutical counselling or behavioral intervention, could offer better intervention with less cost effectively. Having said that, one should never overlook the strength of a physician involvement in adherence intervention with his role as the leader of healthcare team. Moreover, it is documented that the effectiveness of physician involved adherence intervention mainly lies on the quality of their communication with patients.[32] Hence, it is suggested that the effective communication skills with patients should be the essential component during the residency training for physicians.[33]

Medication labelling literacy is a very important capacity for every patient to prevent themselves from medication errors due to misunderstanding of information on medication's label and packaging.[34] In Malaysia, it is reported that Malaysians without formal education and primary education are significantly associated with poor medication labelling literacy and most of them are elderly aged 70 years old and above.[35] The included study which tries to use two modified labels found little effect on the changes of total adherence and comprehension scores when compared to standard label.[17] The finding compliments the past findings that modifying labelling to improve readability and understanding alone is

not sufficient to bring about improvement of medication adherence.[36] Nevertheless, modified label to improve readability and understanding could surely enhance the existing intervention to improve medication adherence.

Numerous studies have recommended the use of text-messaging as a means to improve clinical outcome and modify health behaviour.[37] In terms of medication adherence, text-messaging is also confirmed to improve the medication adherence among patients suffering from asthma, AIDS, type 1 diabetes mellitus and type 2 diabetes mellitus.[38] Besides, the included study again found the text-messaging to be effective in improving the medication adherence among patients with acute coronary syndrome.[16] The only concern of the automated text-messaging intervention is the cost involved in developing and maintaining the system. Apart from that, text-messaging not only serves as an effective intervention in addressing the unintentional medication non-adherence, such as forgetfulness and carelessness, it could also be expanded to become a sophisticated and comprehensive intervention platform.

CONCLUSION

This review provides valuable insights on contemporary interventions to improve medication adherence conducted among Malaysia population by reviewing their effectiveness and limitations. In light of the aforementioned, several feasible implications with supporting literature are recommended for future studies that aim to improve medication adherence in the country and the likes. It is suggested that multifaceted approach with involvement of different healthcare professionals should be encouraged to synergize the strengths of each profession and to further enhance the effectiveness of interventions.

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CONFLICT OF INTEREST

The author declared no conflict of interest.

ABBREVIATIONS

RCT: Randomized controlled Trial; **WHO:** World Health Organization; **AIDS:** Acquired immunodeficiency syndrome.

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